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10/046,620	01/12/2002	Robert A. Lieberman	IOS 01-127	5013

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EXAMINER

PHAM, HOA Q

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/046,620

Applicant(s)

LIEBERMAN ET AL.

Examiner

Hoa Q. Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. Claim 27 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 27, line 7, the period -- . -- at the end should be changed to --;--.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Liu et al (6,277,330).

Liu et al teaches that the TIR sensor can be used as a substrate on which a first grating and/or a second grating may be formed (column 5 lines 51-56 and figures 8A-8E).

Regarding claims 28 and 30, Liu teaches the use of a polarized light source.

Regarding claim 29, see figure 1A, 6A, and 9A for a single reflection.

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***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-19, 27, 29-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ivarsson (6,493,097) in view of Liu et al (6,277,330).

Regarding claims 1, 27, 32, and 45, Ivarsson teaches that prism (Pr) could be replaced a grating or by a substrate on which either sides of the substrate a grating may be formed (column 8 lines 14-15, column 11, lines 62-64, column 13, lines 31-33, and column 20, lines 36-39). Ivarsson does not explicitly teach the use of first and second gratings. However, such a feature is known in the art as taught by Liu et al. Liu et al, from the same field of endeavor, discloses an optical sensor in which the prism could be replaced by a substrate on which a grating and/or two gratings is/are formed (see figures 8A-8E). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the optical sensor of Ivarsson by using two gratings taught by Liu et al because they are of equivalent in function. The substitution for one of another is generally recognized as within the level of ordinary skill in the art.

Regarding claims 2, 4, 33 and 35, Ivarsson and Liu et al do not explicitly teach the type of grating such as Bragg grating or holograms. However, it would have been obvious to one having ordinary skill in the art to use Bragg grating because they are function in the same manner.

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Regarding claims 3 and 34, see column 18, lines 61-64 of Ivarsson for the use of two oscillating for controlling the grating.

Regarding claims 5, 9, 36, and 46-47, see column 15, lines 15-17 of Ivarsson for scanning monochromator.

Regarding claims 6 and 37, it would have been obvious to one having ordinary skill in the art to replace the scanning mirrors of Ivarsson by a means for moving light source because they are of equivalent in function. The substitution for each other is generally recognized as being within the level of ordinary skill in the art.

Regarding claims 7, 13, and 38, see figure 6A of Liu et al for flowcell (17) having inlet (18) and outlet (19).

Regarding claims 8 and 39, see column 21, lines 38-66 of Ivarsson for image processing and monitoring software.

Regarding claims 10 and 41, it would have been obvious to use a stack filter instead of a monochromator of Ivarsson because they are function in the same manner.

Regarding claims 11-12 and 42-43, see column 22, lines 8-14 for the image memory.

Regarding claims 14 and 44, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Liu et al a frame for coupling the optical element having a locating portion engage able with a mating locating element of the TIR instrument because this is a known technique which is known to serve for the purpose of Liu et al.

Regarding claims 15 and 19, see claims 2 and 4 above.

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Regarding claim 16, see figures 8A – 8E of Liu et al.

Regarding claims 17 and 29, see figure 1 of Ivarsson for single reflection.

Regarding claim 18, see figure 6A of Liu et al for inlet and outlet portions.

Regarding claims 30, see figure 16 of Ivarsson for polarizer (P1).

Regarding claim 31, it would have been a matter of design choice to modify the Ivarsson reference by having the first distance and second distance between the TIR surface and the first and second grating, respectively, each being smaller than the first coherent length, since the applicant has not disclosed that having such limitations would solve any problem or is for any particular purpose.

6. Claims 20-26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ivarsson and Liu et al as applied to claim 1-19, 27, 29-47 above, and further in view of Butzer (5,483,346).

Both Ivarsson and Liu et al do not explicitly teach that the detector detects beam of light reflected from the TIR surface including the spatially distributed polarization change caused by the specimen. However, such a feature is known in the art as taught by Butzer. Butzer teaches that the presence of the substance is determined on the basis of changing in polarization. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the basic device of Ivarsson and Liu et al for determine the presence of a sample based on the change of polarization as taught by Butzer if additional detection is desired.

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7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ivarsson et al (5,313,264) and Stewart (5,229,833) disclose an optical biosensor system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (703) 308-4808. The examiner can normally be reached on 6:30 AM to 5 PM, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703) 308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Hoa Q. Pham  
Primary Examiner  
Art Unit 2877

HP  
March 19, 2003